07-743,303

```
d his

     (FILE 'USPAT' ENTERED AT 17:47:25 ON 27 AUG 92)
                SET PAGELENGTH 19
-L1          56198 S ETCH? OR RIE OR GLOW? DISCHARGE?
-L2         137119 S CL OR BR OR CHLORINE? OR BROMINE?
 L3         202498 S O(2W)2 OR OXYGEN?
 L4          29054 S ASH?
-L5         148018 S WATER?(3A)VAPOR? OR H(2W)2
 L6           2233 S L1(P)L2
 L7         574371 S RESIST? OR MASK? OR PHOTORESIST?
 L8           2122 S L4(P)L7
 L9            436 S (L3 OR L5)(P)L8
 L10           102 S L6 AND L9

     FILE 'JPOABS' ENTERED AT 18:15:48 ON 27 AUG 92
 L11         18945 S CL OR BR OR CHLORINE? OR BROMINE?
 L12         50959 S ETCH? OR RIE OR GLOW? DISCHARGE?
 L13          3150 S H(2W)O OR WATER?(3A)VAPOR?
 L14         45598 S O(2W) 2    OR OXYGEN?
 L15          5016 S ASH?
 L16        295163 S RESIST? OR PHOTORESIST? OR MASK?
 L17           233 S L11 AND L12 AND (L13 OR L14)
 L18             5 S L11 AND L12 AND L13 AND L14
 L19          2507 S H(W)(SUB)(W)2(W)O OR WATER?(3A)VAPOR?
 L20             4 S L19 AND L11 AND L12
 L21           231 S L14 AND L11 AND L12
 L22         38343 S (PLASMA? OR NEUTRAL?)
 L23           119 S L21 AND L22
 L24             1 S NEUTRAL? AND PLASMA? AND L21
-L25         26371 S POSTTREAT? OR CORROSION?
 L26             9 S L21 AND L25

     FILE 'USPAT' ENTERED AT 18:35:47 ON 27 AUG 92
 L27         71141 S CORROSION? OR POSTTREAT?
 L28            70 S L27(P)L6
 L29             6 S L28 AND L10
 L30            70 S L6(P)L25
 L31         36043 S L3(P)L5
 L32             7 S L30(3P)L31
 L33            17 S L31 AND L30
 L34            10 S L33 NOT L32
 L35          1892 S L31(P)L7
 L36            88 S L4(P)L35
 L37             8 S 156/659.1/CCLR AND L36
 L38             2 S L36(P)(NEUTRAL?)
 L39             2 S L38 NOT L37
 L40         12586 S (ETCH? OR RIE OR GLOW? DISCHARGE?)/CLM
 L41         34544 S (CL OR BR OR CHLORINE? OR BROMINE?)/CLM
 L42          7619 S (POSTTREAT? OR CORROSION?)/CLM
 L43          8938 S (WATER?(3A)VAPOR? OR H(W)SUB(W)2(W)O)/CLM
 L44         49508 S (OXYGEN? OR O(W)SUB(W)2)/CLM
 L45             0 S L40 AND L41 AND L42 AND L43 AND L44
 L46            18 S L40 AND L41 AND L43
 L47           148 S L40 AND L41 AND L44
 L48             0 S L44 AND L42
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L49             14 S L46 AND L47
L50             14 S L40 AND L41 AND L43 AND L44

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07-743,383

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d his

     (FILE 'USPAT' ENTERED AT 17:47:25 ON 27 AUG 92)
                SET PAGELENGTH 19
L1          56198 S ETCH? OR RIE OR GLOW? DISCHARGE?
L2         137119 S CL OR BR OR CHLORINE? OR BROMINE?
L3         202498 S O(2W)2 OR OXYGEN?
L4          29054 S ASH?
L5         148018 S WATER?(3A)VAPOR? OR H(2W)2
L6           2233 S L1(P)L2
L7         574371 S RESIST? OR MASK? OR PHOTORESIST?
L8           2122 S L4(P)L7
L9            436 S (L3 OR L5)(P)L8
L10           102 S L6 AND L9

     FILE 'JPOABS' ENTERED AT 18:15:48 ON 27 AUG 92
L11         18945 S CL OR BR OR CHLORINE? OR BROMINE?
L12         50959 S ETCH? OR RIE OR GLOW? DISCHARGE?
L13          3150 S H(2W)O OR WATER?(3A)VAPOR?
L14         45598 S O(2W) 2    OR OXYGEN?
L15          5016 S ASH?
L16        295163 S RESIST? OR PHOTORESIST? OR MASK?
L17           233 S L11 AND L12 AND (L13 OR L14)
L18             5 S L11 AND L12 AND L13 AND L14
L19          2507 S H(W)(SUB)(W)2(W)O OR WATER?(3A)VAPOR?
L20             4 S L19 AND L11 AND L12
L21           231 S L14 AND L11 AND L12
L22         38343 S (PLASMA? OR NEUTRAL?)
L23           119 S L21 AND L22
L24             1 S NEUTRAL? AND PLASMA? AND L21
L25         26371 S POSTTREAT? OR CORROSION?
L26             9 S L21 AND L25

     FILE 'USPAT' ENTERED AT 18:35:47 ON 27 AUG 92
L27         71141 S CORROSION? OR POSTTREAT?
L28            70 S L27(P)L6
L29             6 S L28 AND L10
L30            70 S L6(P)L25
L31         36043 S L3(P)L5
L32             7 S L30(3P)L31

=>
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07-743,383

```
set autocost on

PROG:

SS 1 /C?
USER:
etch: or rie  or glow:(3w)discharge:

PROG:
          OCCURS      TERM
               0      SET AUTOCOST ON
               0      ETCH:
               0      RIE
               0      GLOW:
               0      DISCHARGE:
SS 1 PSTG (0)

SS 2 /C?
USER:
file wpat

PROG:
ELAPSED TIME ON ORBIT: 0.03 HRS.
$1.35 ESTIMATED COST CONNECT TIME.
$0.39 ESTIMATED COST TELECOMMUNICATIONS, IF APPLICABLE.
$0.00 ESTIMATED COST OFFLINE PRINTS: 0
$0.00 ESTIMATED COST ONLINE PRINTS: 0
$1.74 ESTIMATED TOTAL COST THIS ORBIT SESSION.
YOU ARE NOW CONNECTED TO THE DERWENT WPAT DATABASE.
COVERS 1963 THRU WEEKLY UPDATE 9226/UP, 9226/UPEQ, 9213/UPA, 9142/UPB;
WPI 9223/UPEQ.

EFFECTIVE UPDATE 9216 NEW FIELDS AND MODIFIED FIELDS ADDED TO THE WPI FILES! SEE
EXPLAIN WPAT FOR DETAILS.

SEE NEWSDOC N166 FOR ENHANCEMENTS TO THE IC FIELD.

SS 1 /C?
USER:
etch: or rie or glow:(3w)discharge:

PROG:

*SEARCHING...
          OCCURS      TERM
           82678      ETCH:
             273      RIE
            6958      GLOW:
          216199      DISCHARGE:
SS 1 PSTG (46027)

SS 2 /C?
USER:
cl2 or br2 or cl or br or chlorine: or bromine:

PROG:

*SEARCHING.
          OCCURS      TERM
            7861      CL2
```

```
            64762     CL
            40679     BR
            23641     CHLORINE:
             7666     BROMINE:
SS 2 PSTG (97467)

SS 3 /C?
USER:
O2 or oxygen:

PROG:

*SEARCHING..
          OCCURS     TERM
           36565     O2
          108080     OXYGEN:
SS 3 PSTG (107806)

SS 4 /C?
USER:
h2o or water:(3w)vapor:

PROG:

*SEARCHING.......
          OCCURS     TERM
           36069     H2O
          629095     WATER:
            2495     VAPOR:
SS 4 PSTG (36770)

SS 5 /C?
USER:
resist: or mask: or photoresist:

PROG:

*SEARCHING........
          OCCURS     TERM
          651595     RESIST:
           51640     MASK:
           13022     PHOTORESIST:
SS 5 PSTG (541613)

SS 6 /C?
USER:
corrosion: or posttreatment: or post-treatment: or anticorrosion:

PROG:

*SEARCHING
          OCCURS     TERM
           66725     CORROSION:
               6     POSTTREATMENT:
               0     POST-TREATMENT:
            2669     ANTICORROSION:
SS 6 PSTG (68391)

SS 7 /C?
USER:
neutral:

PROG:

*SEARCHING.
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```
SS 6 /C?
USER:
his

PROG:
SS 1:   ETCH: OR RIE OR GLOW: (3W) DISCHARGE:   (48027)
SS 2:   CL2 OR BR2 OR CL OR BR OR CHLORINE: OR BROMINE:   (97467)
SS 3:   O2 OR OXYGEN:   (107806)
SS 4:   H2O OR WATER: (3W) VAPOR:   (36770)
SS 5:   RESIST: OR MASK: OR PHOTORESIST:   (541613)
SS 6:   CORROSION: OR POSTTREATMENT: OR POST-TREATMENT: OR
  ANTICORROSION:   (68371)
SS 7:   NEUTRAL:   (56600)

SS 8 /C?
USER:
ss 1 and ss 2 and ss 3

PROG:

*SEARCHING.
SS 8 PSTG (204)

SS 9 /C?
USER:
ss 4 and ss 8

PROG:
SS 9 PSTG (3)

SS 10 /C?
USER:
prt ti 1-3

PROG:

-1-
TI   - Etching specimen surface - by feeding chemical species in form of
       cluster, onto surface, and sepg. atoms of specimen surface

-2-
TI   - Copper etching with strongly alkaline etchant - using neutral
       regeneration soln. for rinsing and etchant regeneration

-3-
TI   - Etch mask for tungsten - comprises spin-on-glass material for high etch
       rate ratio to boron-phosphorus-silicon glass

SS 10 /C?
USER:
prt fu 1-3

PROG:

-1-
AN   - 91-249727/34
XRAM- C91-108646
XRPX- N91-191150
TI   - Etching specimen surface - by feeding chemical species in form of
       cluster, onto surface, and sepg. atoms of specimen surface
DC   - L03 M14 U11 R46
PA   - (NIDE ) NEC CORP
NP   - 1
PN   - J03163625-A  91.07.15 (9134) (JP)
```

AP - 90.02.22 90JP-042957
IC - B01J-019/08 C23F-004/00 H01L-021/30
AB - (J9316382S)
The surface of a specimen is etched by feeding chemical species onto the surface, and sepg. the atoms of the specimen surface from the surface by physical and/or chemical actions of the chemical species against the surface, to etch the surface. The chemical species being fed is in the form of the cluster. The cluster constituent atoms or molecules are pref., Cl2, HCl, F2, O2, CCl4, SF6, CF4, CHF3, ClF3, O2, CO, H2O or NH3.
The etching unit has a cluster producing part, etching chamber part including vacuum exhaust mechanism, cluster ionising part, specimen holding base for holding the specimen in the ionised cluster beams, a cluster accelerating electrode, and collimater for making the cluster into parallel beams.
USE - For etching the surface of a specimen with less damages to the surface and similar etching rate to that of conventional etching unit. (8pp Dwg.No.1/3)

-2-
AN - 90-108466/15
XRAM- C90-047636
XRPX- N90-083898
TI - Copper etching with strongly alkaline etchant - using neutral regeneration soln. for rinsing and etchant regeneration
DC - L03 M14 V04 W04 P78
PA - (HOLL-) HOLLMULLER H MASCH; (DUPO) DU PONT DE NEMOURS DOUT
IN - HAAS R
NP - 5
PN - DE3833242-A 90.04.05 (9015)
WO9003454-A 90.04.05 (9017)
EP-406344-A 91.01.09 (9102)
JP03503071-W 91.07.11 (9134) (JP)
US5076885-A 91.12.31 (9204)
LA - G; E
DS - *JP *KR *US AT BE CH DE FR GB IT LU NL SE AT BE CH DE FR GB IT LI LU NL SE
CT - (G)DE2322392 US4058431 FR2278796 DE2434305 (G)DE2322392 US4058431 FR2278796 DE2434305
PR - 88.09.30 88DE-833242
AP - 88.09.30 88DE-833242 89.09.18 89WO-E01078 89.09.18 89EP-911036
89.09.18 89JP-510291 90.07.10 90US-466449
IC - C23F-001/34 H05K-003/06 B44C-001/22
AB - (DE3833242)
(A) is the etching of copper-contg. workpieces, esp. copper-clad circuit boards, using a strongly alkaline etchant contg. copper tetrammine complex and chloride ions, in which the etchant is regenerated (to reform the tetrammine complex from the ineffective diammine complex decomposition product) by addn. of NH4(+), Cl(-), H2O and O2 and in which a rinse hg. is used to remove etchant adhering to the etched workpieces, the novelty is that (a) the workpieces are rinsed, immediately after etching, with a neutral soln. of a regeneration salt contg. the requisite NH4 (+) and Cl (-) ions; and (b) the used neutral soln. is added to the etchant for regeneration purposes, together with ammonia addn. for pH adjustment (B) An etching plant, for carrying out the process, is also claimed.
ADVANTAGE - The process avoids copper hydroxide pptn. in the rinsing operation and even allows treatment of workpieces coated with an alkali-sclubla etch resist. (7pp Dwg.No.1/1)

-3-
AN - 88-255072/36
XRAM- C88-114168
XRPX- N88-193652
TI - Etch mask for tungsten - comprises spin-on-glass material for high etch rate ratio to boron-phosphorus-silicon glass

FA - (ANON) ANONYMOUS
NP - 1
PN - RD-291014-A 88.07.10 (8836)
PR - 88.06.20 88RD-291014
AP - 88.06.20 88RD-------
IC - H01L-000/01
AB - (RD-291014)
Spin-on-glass (SOG) material is used as a mask over chemical vapour deposited (CVD) tungsten (W) while reactive ion etching (RIE) the W to form line patterns. An unexpectedly high (50:1) etch rate ratio (ERR) of SOG to boron-phosphorous-silicon glass (BPSG) is achieved during wet etch removal of SOG in dilute hydrofluoric (HF) acid, while having a good (6:1) SOG to W ERR in a chlorine plus oxygen (CL2 + O2) RIE.
Substrate has an insulating film layer over it. Polysilicon line is formed on insulator and is overcoated with reflowed BPSG layer. A CVD film of W conformally covers BPSG layer. To define W lines in film, the process begins with application of SOG layer which does not completely planarise the surface, results in the ability to apply a relatively thin coat of etch mask material SOG while assuring good thickness of coverage on high points of a substrate. Photoresist layer is applied to complete the structure.
Standard photo processing is then performed to define a pattern in photoresist layer. That pattern is then etched by standard RIE into SOG layer. Remaining photoresist layer is then stripped and exposed W is removed by a standard RIE process. Dilute HF (H2O:HF=100:1) may be used to remove the remaining SOG layer 12, or the remaining SOG may be incorporated as a permanent part of the integrated circuit structure. Etched edges of W patterns thus formed have an edge slope of about 75 degrees.

SS 10 /C?
USER:
ss 6 and ss 6

PROG:

*SEARCHING
SS 10 PSTG (14)

SS 11 /C?
USER:
ss 7 and ss 10

PROG:
SS 11 PSTG (1)

SS 12 /C?
USER:
prt ab

PROG:

-1-
AB - (WO9200601) applicant
In order to prevent after-corrosion of the wiring and electrodes which are formed by patterning a thin film (2) of Al or an alloy thereof through the use of a reactive ion etching (RIE) that uses an etchant including the gas or a gaseous chloride, chlorine mols. remained on the surfaces of the wirings and the electrodes are removed by exposing the wiring and the electrodes directly yo a plasma generated in atmos. including steam or to a neutral active species extracted from the plasma. This processing is performed in the ashing for removing a resist mask (3) used in the RIE by adding steam to an atmos. including O2, or is performed independently after the ashing. In order to performing the latter indepenent processing, in an automatic processing system

(10) through an evacuatable load-lock chamber (13), and an aftertreatment equipment (40) for removing residual is connected with the asning equipment (20) through a second load-lock chamber (13c).

SE 12 /C?
USER:
prt ss 10 ti 1-10

PROG:

-1-
TI - Preventing corrosion of aluminium@ alloys patterns - by dry etching in chlorine-based gas and removing the resist in an oxygen-ammonia plasma

-2-
TI - Mfg. semiconductor appts. - by dry-etching in 1st reaction chamber using chlorine gas and transferring to 2nd, to remove work using oxygen plasma

-3-
TI - Mfr. of semiconductor integrated circuit - preventing after corrosion of wiring and electrodes by patterning with aluminium alloy

-4-
TI - Infrared detector with refractory metal gate - tantalum layer within MIS structure simplifies high vol. mfr. and improves device operation

-5-
TI - Etching of wiring pattern for semiconductor device - comprising plasma etching contacting exposed surface of sample with liq. and drying

-6-
TI - Optical disc with improve prodn. yield and S=N ratio - comprises reflection film of metal film pattern, chlorine cpd. film and protective layer

-7-
TI - Tungsten structures in semiconductors - for reducing electro-migration and corrosion relative to corresp. aluminium structures while increasing circuit densities

-8-
TI - Chlorine mfr. - using oxygen and hydrogen chloride reacted in presence of chromium oxide catalyst in lined reactor

-9-
TI - Pattern forming method - by applying on metal substrate coating resist, exposing and baking

-10-
TI - Dry etching aluminium or aluminium alloy layer - using chlorine species gas in two stages with intermediate fluorine species gas plasma exposure step

SS 12 /C?
USER:
prt ss 10 ti 11-14

PROG:

-11-
TI - Corrosion inhibition of aluminium (alloy) films - by introducing bromine-contg. plasma after completion of plasma etching

-12-
TI - Regeneration plant for acid cupric chloride etching soln. - used in mfg.

oxygen to re:oxidise cuprous chloride

-13-
TI - Plasma etching with reduced corrosion of workpieces by exposing to heated gas in after treatment chamber

-14-
TI - Forming etched patterns using a chromium oxide mask - by coating substrate with chromium oxide and etching with plasma gas contg. oxygen and chlorine, fluorine or bromine, to form the mask

SS 12 /C?
USER:
prt ss 10 fu 1-3,5-7,9-11,13

PROG:

-1-
AN - 92-168448/21
XRAM- C92-077451
XRPX- N92-126965
TI - Preventing corrosion of aluminium alloys patterns - by dry etching in chlorine-based gas and removing the resist in an oxygen-ammonia plasma
DC - L03 M14 U11
PA - (NIDE) NEC CORP
IN - MIYAMOTO H
NP - 1
NC - 3
PN - EP-485802-A1 92.05.20 (9221) 7p E H01L-021/321
LA - E
DS - DE FR GB
CT - EP--19915 EP-247603 EP-287097
PR - 90.10.30 90JP-292876
AP - 91.10.29 91EP-118457
IC - H01L-021/321
AB - (EP-485802-A)
Corrosion of Al alloy coatings on semiconductor substrates is prevented by: (1) patterning the layer using a resist pattern mask and a Cl2-based dry etch gas; and (2) removing the resist using an O2/NH3 gas plasma, the NH3 content pref. being 5-25% of total flow.
The resist is pref. removed at 150-225 deg. C and the plasma is a downflow plasma generated by microwave or HF.
ADVANTAGE - Corrosion of the Al alloy is prevented, even when there is an outer or inner layer of Ti, TiW, etc. to be etched with an F-based gas. (1/2)

-2-
AN - 92-073148/12
XRAM- C92-043166
XRPX- N92-069605
TI - Mfg. semiconductor appts. - by dry-etching in 1st reaction chamber using chlorine gas and transferring to 2nd, to remove work using oxygen plasma
DC - L03 M14 U11 R46
AW - OXYGEN@ GAS
PA - (MATU) MATSUSHITA ELEC IND KK
NP - 1
PN - J04036485-A 92.02.06 (9212) (JP)
FR - 90.06.01 90JP-144059
AP - 90.06.01 90JP-144057
IC - C23F-004/00 H01L-021/30
AB - (J04036485)
Mfg. semiconductor etching appts. having at least two plasma reaction chambers, in the 1st reaction chamber, hing with Cl2 gas is conducted for the substrate (1) using a mask of photoresist pattern, and the substrate is transferred into the 2nd reaction chamber through vacuum space to

heating work to heat the substrate to 200 deg.C is conducted in the 2nd reaction chamber.

ADVANTAGE - Residual Cl2 gas is perfectly eliminated, therefore there is no anxiety for after corrosion of the substrate. (6pp Dwg.No.1/2)

-3-

AN - 92-041722/05
XRAM- C92-018316
XRPX - N92-032059
TI - Mfr. of semiconductor integrated circuit - preventing after corrosion of wiring and electrodes by patterning with aluminium alloy
DC - L03 U11 R46
PA - (FUIT) FUJITSU LTD
IN - FUJIMURA S,HARADA F,ISHIDA T,ITO T,KONDO T,KONNO JI,SHINAGAWA K,KONNO J
NP - 2
NC - 16
PN - WO9200601-A 92.01.09 (9205)
EP-489179-A1 92.06.10 (9224) 20p E H01L-021/302
LA - J; E
DS - *JP *KR *US AT BE CH DE DK ES FR GB GR IT LU NL SE
CT - (J)J64048421 J02144525 J61147530 J64030225 J02049425 J02072628 J01237733 J02071519
PR - 90.06.27 90JP-171791
AP - 91.06.26 91EP-911946 91.06.26 91WO-J00861
FD - EP-489179 Based on WO9200601
IC - H01L-021/302
AB - (WO9200601)

In order to prevent after-corrosion of the wiring and electrodes which are formed by patterning a thin film (2) of Al or an alloy thereof through the use of a reactive ion etching (RIE) that uses an etchant including the gas or a gaseous chloride, chlorine mols. remained on the surfaces of the wirings and the electrodes are removed by exposing the wiring and the electrodes directly yo a plasma generated in atmos. including steam or to a neutral active species extracted from the plasma. This processing is performed in the ashing for removing a resist mask (3) used in the RIE by adding steam to an atmos. including O2, or is performed independently after the ashing. In order to performing the latter independent processing, in an automatic processing system disclosed, an ashing equipment (20) is connected with a RIE equipment (10) through an evacuatable load-lock chamber (13), and an aftertreatment equipment (40) for removing residual is connected with the ashing equipment (20) through a second load-lock chamber (13c).

-5-

AN - 90-269592/36
XRAM- C90-116561
XRPX - N90-206653
TI - Etching of wiring pattern for semiconductor device - comprising plasma etching contacting exposed surface of sample with liq. and drying
DC - L03 U11 R45 R46
PA - (HITA) HITACHI KK
IN - KAWASAKI Y,KAWAHARA H,SATO Y,FUKUYAMA R,NOJIRI K,TORII Y
NP - 3
PN - EP-385590-A 90.09.05 (9036)
JP2224233-A 90.09.06 (9042) (JP)
US5007981-A 91.04.16 (9118)
LA - E
DS - DE FR GB
CT - (E)EP--10138 EP-187249 DE3442844
PR - 89.02.27 89JP-042976
AP - 90.02.07 90EP-301267 89.02.27 89JP-042976 90.02.07 90US-477474
IC - C23F-004/00 H01J-037/18 H01L-021/32
AB - (EP-385590)

A method and appts. are provided for the processing of silicon

total quantity of oxygen flowed past the sample was only about three times the stoichiometric oxygen required for the perfect oxidation of PCBs. In a hydrogen plasma, PCBs gave ethane and isobutane as major gaseous products and several higher hydrocarbons as minor products. Almost all of the chlorine in PCBs was converted to hydrogen chloride. Major products from PCBs in a water vapor plasma were carbon dioxide, carbon monoxide, and hydrogen chloride. No other products were detected. The mechanisms for reactions occurring in plasmas are discussed. The importance of the wall effect for the formation of solid products is discussed.

55 13 /C?
USER:
stop y

PROG:
TERMINAL SESSION FINISHED 08/28/92 2:30 P.M. (CENTRAL TIME)
ELAPSED TIME ON INSC: 0.05 HRS.
$6.00 ESTIMATED COST CONNECT TIME.
$0.65 ESTIMATED COST TELECOMMUNICATIONS, IF APPLICABLE.
$0.00 ESTIMATED COST OFFLINE PRINTS: 0
$2.40 ESTIMATED COST ONLINE PRINTS: 3
$9.05 ESTIMATED TOTAL COST THIS INSC SESSION.
ELAPSED TIME THIS TERMINAL SESSION: 0.43 HOURS.
$58.85 ESTIMATED COST CONNECT TIME.
$5.59 ESTIMATED COST TELECOMMUNICATIONS, IF APPLICABLE.
$0.00 ESTIMATED COST OFFLINE PRINTS: 0
$17.00 ESTIMATED COST ONLINE PRINTS: 38
$81.44 ESTIMATED TOTAL COST THIS TERMINAL SESSION.
ORBIT SEARCH SESSION COMPLETED. THANKS FOR USING ORBIT!

TERMINAL (ENTER 1, 2, 3, OR ?):

photoelectron spectroscopy (XPS). The mc-Si films containing between 1% and 3% Cl were exposed to 200-Torr oxygen, or water vapors, for 50 h and their oxidation was compared to that of single-crystal Si(100) under identical conditions. The Si 2p spectra, changing in depth, contained contributions from all oxidation states (+4, +3, +2, +1, 0), with composition depending on the reacting gas and the crystallinity of the Si substrate. Exposure to water vapors leads to heavier oxidation (higher oxidation states and thicker oxides), as compared to oxygen exposure. In both cases, the oxidation resulted in some chlorine depletion mainly in the SiO/sub 2/-rich external surface of the mc-Si films. As to the role of the microcrystalline structure, the most pronounced effects involved enhancement of oxidation to the Si/sup 1+/ and Si/sup 3+/ states across the thicker SiO/sub 2/-Si interface.

-2-
AN - A87113771
TI - Plasma etching of aluminum-A comparison of chlorinated etchants
AU - Danner, D.A.; Daivie, M.; Hess, D.W.
OS - Dept. of Chem. Eng, California Univ., Berkeley, CA, USA
SO - J. Electrochem. Soc. (USA), vol.134, no.3, PP.669-73, March 1987, 43 REF.
JC - JESOAN
DT - J (JOURNAL PAPER)
NU - ISSN 00134651
CC - *A6160B
TC - EX (EXPERIMENTAL)
IT - aluminium; sputter etching
ST - tetrachloromethane; chlorinated etchants; plasma-assisted etching; RF glow discharges; native oxide reduction; rate-limiting processes; etch gas dissociation effects; BCl/sub 3/; SiCl/sub 4/; Al; BCl/sub 2/
MF - Al/sur Al/el; BCl3/bin Cl3/bin Cl/bin B/bin; BCl2/bin Cl2/bin Cl/bin B/bin; BCl3/bin Cl3/bin Cl/bin B/bin; SiCl4/bin Cl4/bin Cl/bin Si/bin
AB - The plasma-assisted etching of aluminum in chlorine containing RF glow discharges has been studied. Use of a single parallel plate reactor permitted a direct comparison of etch results between BCl/sub 3/, BCl/sub 3//Cl/sub 2/, CCl/sub 4/, and SiCl/sub 4/. Separation of aluminum etching into native oxide reduction and water vapor/oxygen scavenging, and metal film etching allowed the likely rate-limiting processes in the etch cycle to be ascertained for the different etch gases. The longer initiation period observed with CCl/sub 4/ and SiCl/sub 4/ compared to BCl/sub 3/ appeared to be due to etch gas dissociation effects. Metal etching was believed to be limited by the removal of CCl/sub x/ and SiCl/sub x/ residues with CCl/sub 4/ and SiCl/sub 4/ and by etchant generation with BCl/sub 3/.

-3-
AN - A8303460?
TI - Decomposition of PCBs in the radio-frequency glow discharge plasmas of oxygen, hydrogen, and water vapor (IN Can. J. Chem. (Canada))
AU - Hiraoka, K.; Aoyama, K.; Nakamura, T.; Mochizuki, S.; Mitsumori, K.; Matsunaga, K.
OS - Faculty of Engng., Yamanashi Univ., Kofu, Japan
SO - Can. J. Chem. (Canada), vol.60, no.22, PP.2876-82, 15 Nov. 1982, 22 REF.
JC - CJCHAG
CN - 0008-4042/82/222876-07 $01.00/0
DT - J (JOURNAL PAPER)
NU - ISSN 00084042
CC - *A8230L; A5280H
TC - EX (EXPERIMENTAL)
IT - glow discharges; molecular dissociation; organic compounds
ST - polychlorinated benzenes; glow discharge plasmas; oxidation
AB - A study was made on the decomposition of PCBs in a radio-frequency glow discharge plasma. PCBs were completely decomposed in plasmas of a few Torr of oxygen, hydrogen, and water vapor. Gaseous products from PCB's in an oxygen plasma were carbon monoxide, carbon dioxide, water, hydrogen chloride, chlorine, and chlorine dioxide. Hazardous compounds such as

```
  1023      RIE
  7596      GLOW:
 56015      DISCHARGE:
    12      CL2
    47      BR2
 18461      CL
 13069      BR
  6091      CHLORINE:
  2510      BROMINE:
   442      O2
 56441      OXYGEN:
    54      H2O
 98815      WATER:
 33807      VAPOR:
129386      RESIST:
 17101      MASK:
  5763      PHOTORESIST:
 19869      CORROSION:
    22      POSTTREATMENT:
    26      POST-TREATMENT:
   111      ANTICORROSION:
 47839      NEUTRAL:
 16266      STEAM:
SS 1:   ETCH: OR RIE OR GLOW: (3W) DISCHARGE:   (27593)
SS 2:   CL2 OR BR2 OR CL OR BR OR CHLORINE: OR BROMINE:   (31029)
SS 3:   O2 OR OXYGEN:   (55876)
SS 4:   H2O OR WATER: (3W) VAPOR:   (3401)
SS 5:   RESIST: OR MASK: OR PHOTORESIST:   (123395)
SS 6:   CORROSION: OR POSTTREATMENT: OR POST-TREATMENT: OR
  ANTICORROSION:   (19923)
SS 7:   NEUTRAL:   (45369)
SS 8:   SS 1 AND SS 2 AND SS 3   (106)
SS 9:   SS 4 AND SS 8   (3)
SS 10:   SS 8 AND SS 6   (7)
SS 11:   SS 7 AND SS 10   (0)
SS 12:   (   SS 4 OR STEAM:   ) AND SS 8   (3)

SS 13 /CT
USER:
prt fu 1-3

PROG:

-1-
AN  - A88007345
TI  - Oxidation of microcrystalline Si:H:Cl films (10th International Vacuum
      Congress (IVC-10), 6th International Conference on Solid Surfaces
      (ICSS-6) and 33rd National Symposium of the American Vacuum Society,
      Baltimore, MD, USA, 27-31 Oct. 1986)
AU  - Grossman, E.; Grill, A.; Polak, M.
OS  - Dept. of Mater. Eng., Ben-Gurion Univ. of the Negev, Beer-Sheva, Israel
SO  - vol.5, no.4, pt.3, PP.1680-3, July-Aug. 1987, 18 REF.
JC  - JVTAD6
CN  - 0734-2101/87/041680-04 $01.00
DT  - PA (CONFERENCE PAPER)
NU  - ISSN 07342101
CC  - *A8160C; A8115J; A6855; A7960G
TC  - Ex (EXPERIMENTAL)
IT  - chlorine; elemental semiconductors; hydrogen; impurities; oxidation;
      plasma deposited coatings; silicon; X-ray photoelectron spectra
ST  - semiconductor; RF glow discharge; X-ray photoelectron spectroscopy;
      microcrystalline structure; Si:H, Cl
MF  - Si:H,Cl/sur Cl/sur Si/sur H/sur Si:H,Cl/ss Cl/ss Si/ss H/ss Cl/el Si/el
      H/el Cl/oop H/do
AB  - The oxidation of microcrystalline (mc-) sil[redacted]n films, deposited from
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AN - 87-182186
TI - METHOD FOR FORMING THIN FILM OF SINGLE CRYSTAL
PA - (2000584) MATSUSHITA ELECTRONICS CORP
IN - SUSA, MASAHIRO; SENDA, KOJI; HIROSHIMA, YOSHIMITSU
PN - 87.08.10 J62182186, JP 62-182186
AP - 86.02.03 86JP-021442, 61-21442
SO - 88.01.30 SECT. C, SECTION NO. 472; VOL. 12, NO. 33, PG. 113.
IC - C30B-013/00; C30B-029/06; H01L-021/18
JC - 13.1 (INORGANIC CHEMISTRY--Processing Operations); 42.2 (ELECTRONICS--Solid State Components)
FKW - R016 (ZONE MELTING)
AB - PURPOSE: To form a thin film of single crystal in good reproducibility, by partially removing an oxidized film formed on the top of a polycrystal film, melting and recrystallizing the polycrystal film so that explosion of the polycrystal film and the oxidized film occurring in melting can be prevented.

CONSTITUTION: For example, a Si substrate 1 is thermally oxidized to form a SiO(sub 2) film 2 on the top and further a SiH(sub 4) gas is thermally decomposed by the use of vacuum CVD device to pile a Si film 4 on the SiO(sub 2) film. Then, SiH(sub 2)Cl(sub 2) is reacted with a NH(sub 3) gas by the use of the vacuum CVD device, a nitride film 6 is piled and pattern formation of the nitride film 6 is carried out by plasma etching. Then, LOCOS growth is carried out in high-temperature steam to form a LOCOS oxidized film 3 of poly Si and the nitride film 6 is removed with hot concentrated phosphoric acid. Then, the resulting film is thermally oxidized in a high-temperature dried oxygen to form a SiO(sub 2) film 5 and the SiO(suc 2) film 5 is partially removed. Then, the film is irradiated with CW argon ion laser. Explosion of the polycrystal film 4 and the oxidized film 5 caused by volume expansion resulting from melting of the polycrystal film 4 by the laser beam irradiation can be suppressed by partial removal of the oxidized film 4 and the thin film of single crystal can be formed in good reproducibility.

SS 13 /C?
USER:
ss 1 and ss 3 and ss 12

PROG:
SS 13 PSTG (4)

SS 14 /C?
USER:
file inspec

PROG:
ELAPSED TIME ON JAPIO: 0.07 HRS.
$11.90 ESTIMATED COST CONNECT TIME.
$0.71 ESTIMATED COST TELECOMMUNICATIONS, IF APPLICABLE.
$0.00 ESTIMATED COST OFFLINE PRINTS: 0
$2.20 ESTIMATED COST ONLINE PRINTS: 4
$15.01 ESTIMATED TOTAL COST THIS JAPIO SESSION.
YOU ARE NOW CONNECTED TO THE INSPEC DATABASE.
COVERS FROM 1977 THRU WEEKLY UPDATE (9238)
SEE FILE IN8K FOR COVERAGE FROM 1969 THROUGH 1976.

SS 1 /C?
USER:
recall etch

PROG:

%SEARCHING.....

OCCURS	TERM
31949	ETCH?

an etching operation by using a gas in which steam of less than 25% of a main gas used for the etching operation has been mixed as an additive gas.
CONSTITUTION: An etching operation is executed by introducing a gas into a reaction chamber, by transforming the gas into a plasma by applying a nigh frequency and by using a gas in which steam of less than 25 % or a main gas has been mixed as an adoitive gas. Dissociation to the plasma is limited by using only a Freon-based gas or a chlorine-based gas; nowever, when the steam is added, the dissociation is promoted by an influence of hyarogen and oxygen, an etchant is increased and an etch rate is increased. When the Freon- based gas or the chiorine-based gas is used singly, an undercut is easy to produce, however, when the steam is added, a sidewall protective film is formed and an anisotropic shape can be obtained.

-2-
AN - 91-046324
TI - MANUFACTURE OF SEMICONDUCTOR DEVICE
PA - (200236) SEIKO EPSON CORP
IN - YANAI, MASAHARU
PN - 91.02.27 J03046324, JP 03-46324
AP - 89.07.14 89JP-181972, 01-181972
SO - 91.05.13 SECT. E, SECTION NO. 1066; VOL. 15, NO. 185, PG. 83.
IC - H01L-021/302
JC - 42.2 (ELECTRONICS--Solid State Components)
FKW - R004 (PLASMA)
AB - PURPOSE: To enhance a selective ratio by executing an etching operation by using a gas in which bromine used as a main gas has been mixed with oxygen or steam of less than specific % of the main gas singly or with a combination of these as an additive gas.
CONSTITUTION: When silicon is etched by introducing a gas into a reaction chamber and by transforming the gas into a plasma after applying a high frequency, it is etched by using a gas in which bromine used as a main gas has been mixed with oxygen or steam of less than 25% of the main gas singly or with a comcination of these as an additive gas. When the oxygen or the steam is added to the bromine in this manner, silicon dioxide is generated as a deposition for sidewall protection use; consequently, a high selective ratio can be obtained with reference to the silicon dioxide of a substratum.

-3-
AN - 89-086521
TI - DRY ETCHING
PA - (200307) TOSHIBA CORP
IN - ARIKADO, TSUNETOSHI; OKANO, HARUO
PN - 89.03.31 J01086521, JP 01-86521
AP - 87.09.29 87JP-242660, 62-242660
SO - 89.07.19 SECT. E, SECTION NO. 789; VOL. 13, NO. 317, PG. 01.
IC - H01L-021/302
JC - 42.2 (ELECTRONICS--Solid State Components)
AB - PURPOSE: To remove an adhesive film on a sidewall of a resist and the resist through a dry method using no solution by successively making fluorine radicals, oxygen radicals and chlorine radicals act on the resist in their order, the adhesive film of which is formed onto the sidewall after etching.
CONSTITUTION: The mixed gas of Freon and oxygen is introduced into a discharge tube 49, pressure is kept at 0.2Torr, microwaves are applied from a microwave power 50, and microwave discharge is generated. Fluorine radicals generated are fed into a vacuum vessel 41. Nitrogen trifluoride is introduced into the discharge tube 49, pressure is kept at 0.2Torr, and microwaves are applied while steam is induced from a gas introducing tube 46. Lastly, chlorine gas is induced into the discharge tube 49, pressure is kept at 0.2Torr, microwaves are applied, and chlorine radicals generated are introduced into the vacuum vessel 41. When a sample 45 is extracted and observed by SEM, an adhesive film on a sidewall is removed completely.

```
SS 1 /C?
USER:
recall etch

PROG:

*SEARCHING.........
          OCCURS     TERM
           73452     ETCH:
            1472     RIE
            5911     GLOW:
          172714     DISCHARGE:
             144     CL2
              33     BR2
           12340     CL
            5816     BR
            7890     CHLORINE:
            2393     BROMINE:
             297     O2
           40870     OXYGEN:
               4     H2O
          247973     WATER:
           54455     VAPOR:
          366014     RESIST:
           54168     MASK:
           10604     PHOTORESIST:
           31912     CORROSION:
              67     POSTTREATMENT:
               0     POST-TREATMENT:
             758     ANTICORROSION:
           21367     NEUTRAL:
           28992     STEAM:
SS 1:   ETCH: OR RIE OR GLOW: (3W) DISCHARGE:   (58577)
SS 2:   CL2 OR BR2 OR CL OR BR OR CHLORINE: OR BROMINE:   (23280)
SS 3:   O2 OR OXYGEN:   (41031)
SS 4:   H2O OR WATER: (3W) VAPOR:   (2225)
SS 5:   RESIST: OR MASK: OR PHOTORESIST:   (350540)
SS 6:   CORROSION: OR POSTTREATMENT: OR POST-TREATMENT: OR
  ANTICORROSION:   (32446)
SS 7:   NEUTRAL:   (18821)
SS 8:   SS 1 AND SS 2 AND SS 3   (160)
SS 9:   SS 4 AND SS 8   (0)
SS 10:   SS 8 AND SS 6   (10)
SS 11:   SS 7 AND SS 10   (0)
SS 12:   (   SS 4 OR STEAM:   ) AND SS 8   (4)

SS 13 /C?
USER:
prt fu 1-4

PROG:

-j-
AN   - 91-046326
TI   - MANUFACTURE OF SEMICONDUCTOR DEVICE
PA   - (200236)  SEIKO EPSON CORP
IN   - YANAI, MASAHARU
PN   - 91.02.27  J03046326, JP 03-46326
AP   - 89.07.14  89JP-181974, 01-181974
SO   - 91.05.13  SECT. E, SECTION NO. 1066; VOL. 15, NO. 185, PG. 84.
IC   - H01L-021/302
JC   - 42.2 (ELECTRONICS--Solid State Components)
FKW  - R004 (PLASMA)
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reactor pressure of 300 millimicrons.

The method is suitable for protecting etched Al surfaces in semiconductor mfr. Bromine has a lower chemical reactivity w.r.t. chlorine causes retained surface chlorine to be lost, improving the resistance of the film to corrosion caused by hygroscopic pickup. (3pp)

-13-
AN - 82-20155E/11 (20155E)
XRAM- C82-E20155
TI - Plasma etching with reduced corrosion of workpieces - by exposing to heated gas in after treatment chamber
DC - L03 U11 R46 P55
PA - (TOKE) TOKYO SHIBAURA DENK
IN - YAMAZAKI T
NP - 7
PN - EP--47002-A 82.03.10 (8211)
JS7047876-A 82.03.18 (8217) (JP)
EP--47002-B 84.04.11 (8416)
US4442338-A 84.04.10 (8417)
DE3163085-G 84.05.17 (8421)
DD-207927-A 84.03.21 (8429)
JP88053268-B 88.10.21 (8846) (JP)
LA - E
DS - DE FR GB DE FR GB
CT - (E)No-SR.Pub DE2930291 US4256534 DE2730819 DE2703659 US4094722 DE2730156 (E)DE2703659 DE2730156 DE2730819 DE2930291
PR - 80.09.03 80JP-121007
AP - 81.08.26 81EP-106743 81.08.26 81US-296305 80.09.03 80JP-121007
IC - H01L-021/30 C23F-001/08 B23K-009/00 C23C-015/00 C23F-004/00
AB - (EP--47002)
Plasma etch appts. comprises (a) an etch chamber contg. parallel facing flat plate electrodes, one connected to a high frequency power supply, and an inlet for reactive gas, pref. Cl-contg. gas; (b) an after-treatment chamber connected to the etch chamber and having an inlet for heated gas; (c) a partition hermetically dividing the chambers from each other and (d) a conveyor transporting workpieces from the etch chamber to the after-treatment chamber. The appts. pref. also includes (e) a feed chamber connected to the etch chamber; (f) a receiving chamber connected to the after-treatment chamber; and (g) conveyors transporting the workpieces between chambers.

A workpiece is plasma etched by (i) exposing to a reactive gas plasma formed between flat plate electrodes by high frequency power supply; (ii) removing the workpiece from the etch chamber; and (iii) thermally treating with flowing heated gas.

The treatment minimises corrosion of the workpieces, esp. in semiconductor device (VLSI) mfr., where Cl is effectively removed by the

yes

PROG:
SAVE ETCH COMPLETED.

SS 13 /C?
USER:
file japio

PROG:
ELAPSED TIME ON WPAT: 0.30 HRS.
$39.60 ESTIMATED COST CONNECT TIME.
$3.70 ESTIMATED COST TELECOMMUNICATIONS, IF APPLICABLE.
$0.00 ESTIMATED COST OFFLINE PRINTS: 0
$12.40 ESTIMATED COST ONLINE PRINTS: 31
$55.90 ESTIMATED TOTAL COST THIS WPAT SESSION.
YOU ARE NOW CONNECTED TO THE JAPIO DATABASE.
COVERS PATENT APPLICATIONS FROM OCT 1976 THRU FEBRUARY 1992 (9208)

XRPX- N84-178120
TI - Dry etching aluminium or aluminium alloy layer using chlorine species gas in two stages with intermediate fluorine species gas plasma exposure step
DC - L03 M14 U11 R46 P78
PA - (FUIT) FUJITSU LTD
IN - TAKADA T;SHIMIZU K
NP - 5
PN - EP-122776-A 84.10.24 (8443)
J59189633-A 84.10.27 (8449) (JP)
US4547260-A 85.10.15 (8544)
EP-122776-B 90.12.27 (9101)
DE3483847-G 91.02.07 (9107)
LA - E
DS - DE FR GB DE FR GB
CT - (E)No-SR.Pub A3...8738 EP--23429 EP---19915 1.Jnl.Ref (E)EP--19915 EP--23429 1.Jnl.Ref
PR - 83.04.13 83JP-064719
AP - 84.04.12 84EP-302493 83.04.13 83JP-064719 84.04.10 84US-598741 84.04.12 84EP-302493
IC - H01L-021/31 B44C-001/22 C03C-015/00 C03C-025/06 C23F-001/02
AB - (EP-122776)
Al (alloy) layer is etched by: dry etching to remove part of the layer thickness using Cl2 or a Cl2-cpd. gas; exposing to an F or F-cpd. gas plasma; and further dry etching using Cl2 or a Cl2-cpd. gas.
Plasma gas is CHF3, CF4, C2F6, or C3F8, opt. contg. O2 or an inert gas. The F radicals in the plasma react with the pattern mask resist film to inhibit HCl formation on exposure to air after the etching.
USE/ADVANTAGE - In forming an Al (alloy) wiring pattern in semiconductor devices such as ICs and LSI circuits. Side etching and post-etching corrosion are minimised, permitting high precision patterning. Where layer is Al-Si formation of residual polySi is minimised. (20pp Dwg.No.4a/6)

-11-
AN - 82-87924E/41 (87924E)
XRAM- C82-E87924
TI - Corrosion inhibition of aluminium (alloy) films - by introducing bromine-contg. plasma after completion of plasma etching
DC - L03 M14 U11 R46
AW - ALLOY
PA - (FAIH) FAIRCHILD CAMERA CORP; (FAIN) FARMAKOLOGISKA INST
IN - RADIGAN KJ
NP - 7
PN - US4351696-A 82.09.28 (8241)
EP--78224-A 83.05.04 (8319)
J58081974-A 83.05.17 (8325) (JP)
CA1163803-A 85.03.12 (8515)
EP--78224-B 85.09.11 (8537)
JB5039753-B 85.09.07 (8540) (JP)
DE3266225-G 85.10.17 (8543)
LA - E
DS - DE FR GB IT NL DE FR GB IT NL
CT - (E)EP--19915 US4256534 J55085670 J55041918 2.Jnl.Ref (E)EP--19915 US4256534 2.Jnl.Ref
PR - 81.10.28 81US-315693
AP - 82.10.26 82EP-401974 82.10.28 82JP-188293
IC - H01L-021/30 C23C-015/00 C23F-001/00 C23F-011/02 C23C-014/00 C23F-004/00
AB - (US4351696)
Inhibiting corrosion of Al (alloy) films which have been etched using a chlorinated plasma comprises exposing the films to a Br-contg. plasma. More specifically, the process comprises (i) purging the reactor using oxygen and nitrogen for 5 mins. at a reactor power of 3.0A and a pressure of 400 millimicrons; (ii) switching the power off and introducing methyl bromide for 2 mins. at a reactor pressure of 300 millimicrons; and (iii)

LA - E
DS - DE FR GB
CT - (E)US4285834 3.Jnl.Ref
FR - 87.06.12 87US-062261 89.01.04 89US-293550
AP - 88.06.10 88EP-305344 88.06.09 88JP-142728 89.01.04 89US-293550
IC - H01L-021/00 H01L-023/52
AB - (EP-295135)
Metallic structures are formed on a semiconductor surface by a process characterised in that a protective layer of chronium (14) is formed on the semiconductor surface and tungsten structures are formed upon the chromium layer.

Chronmium layer (14) pref. func as an etch-stop protective layer while tungsten layer (16) is itself moved with chronium (18) during etching to from the tungsten stuctures.

USE/ADVATNAGE - Multilever integrate circuits. Tungsten structures have a higher m.pt., are harder and more device, and much less susceptible to electromigrative problems than aluminium. Inhibit size limitations are therefore reduced and much greater circuit derivaties are achievable with tungsten. Corroium problems associated with the use of chlorine atmos in aluminium etching are also eliminated. (11pp Dwg.No.6/12)

-9-
AN - 85-138317/23
xRAM- C85-060253
xRPx- N85-104090
TI - Pattern forming method - by applying on metal substrate coating resist, exposing and baking
DC - G06 L03 U11 P83 R46
PA - (FUIT) FUJITSU LTD
NP - 1
PN - J60074524-A 85.04.26 (8523) (JP)
PR - 83.09.30 83JP-180450
AP - 83.09.30 83JP-180450
IC - G03C-001/00 H01L-021/30
AB - (J60074524)
The method involves coating resist contg. halogen gp element on a metal substrate for developing after exposure and then baking. The exposure and baking may be performed in vaccum or in inert gas atmosphere.

USE/ADVANTAGE - In the conventional process for forming wiring pattern on an Al substrate, resist is coated on the Al substrate, then is exposed through a pattern to light or electron beam, and the exposed resist is developed to obtain a resist pattern. The resist pattern is used as a mask and etching is executed to obtain desired wiring pattern on the aluminum substrate. Thus corrosion is caused on the metal substrate when resist contains halogen gp element such as Cl or F, and the resist is prebaked prior to exposure. Now this disadvantage is eliminated by exposure prior to baking.

In an example, surface of silicon wafer is oxidised to form SiO2 film of 5000 Angstrom thickness, and Al-Si alloy (contg. 3% Si) is deposited by sputtering. Resist film is formed by coating xylene soln of chloromethylated styrene on the Al-Si layer, and prebaked at 100 deg.C for 20 min. Then the resist film is exposed to electron beam of 20 keV acceleration voltage and 5x10 to power-6 C/cm2 energy. After allowing the exposed wafer to stand for 2 hr, the resist film is removed by oxygen plasma. The surface of the Al-Si surface after removing the resist film contained black specks due to corrosion. If the time of standing before removal of the resist film is 5hr, the number of the speck increases to several thousand/cm2. On the other hand, if the wafer is exposed to electron beam prior to prebaking, and baking at 100 deg.C for 20 min is performed thereafter, and the resist film is removed after 5 hr, no specks due to corrosion are observed. (5pp Dwg.No.1-3/6)

-10-
AN - 84-263189/43

after a plasma etching step. Process comprises (i) plasma etching; (ii) a second plasma treatment in a different atmos. to remove residual corrosive cpds. formed in step (i); (iii) contacting the exposed surface of the sample with liq. to remove residual corrosive cpds. and/or passivate the exposed surface; (iv) drying the sample.

Pref. the etching plasma is formed in a chlorine-contg. gas atmos. and etching is performed through a mask; the secondm plasma treatment uses oxygen atmos. and removes the mask; the liq. of step (iii) is water, alkaline liq. and then water, acidic liq. and then water, or mixt. of nitric acid and hydrofluoric acid and then water; the washing step (iii) uses an inert gas atmos.

USE/ADVANTAGE - The method is esp. useful for formation of wiring films by etching metallic films comprising laminates or alloys of metals of different ionisation potentials such as Al, Cu, W, Ti, Mo, other refractory metals and alloys (including alloys contg. Si), refractory metal silicides, TiN and TiW. Combination of steps (ii) and (iii) remarkably improves the corrosion resistance of the plasma etched samples. (18pp Dwg.No.2/9)

-6-
AN - 90-220007/29
XRAM- C90-094961
XRPX- N90-170547
TI - Optical disc with improve prodn. yield and S=N ratio - comprises reflection film of metal film pattern, chlorine cpd. film and protective layer
DC - G06 L03 T03 W04 P75 R34 R35
AW - CD ROM
PA - (NIDE) NEC CORP
NP - 1
PN - J02148429-A 90.06.07 (9029) (JP)
PR - 88.11.30 88JP-300724
AP - 88.11.30 88JP-300724
IC - B41M-005/26 G11B-007/24 G11C-013/04
AB - (J02148429)
Optical disc is obtd. by lamination of (a) a reflection film made of a metal film pattern correspond with required digital information, (b) a chlorine cpd. film made of at least one of Ag, K or Cu and (c) a protective layer on a transparent disc substrate.

USE/ADVANTAGE - The optical disc is applied to CD-ROM. The disc has improved production yield, 1.6 times high S/N ratio and corrosion resistance.

In an example, a magnetic disc was prepd. from 0.15 micron thick Al film formed on reinforced glass substrate by electron beam vapour deposition. A pattern corresponding with digital information is formed on it by etching using photoresist film. The resist film was removed by oxygen ashing, 0.8-1.0 micron thick a chloride cpd. (of Au, K or Cu) by resistant heat vapour deposition (5 x 10 power-3 Torr Ar, 2A, 70 deg.C). A protective film was formed. The process needed no injection moulded pattern. Test of the optical disc showed that C/N ratio was 160% compared with conventional one. (4pp Dwg.No.1,2/2)

-7-
AN - 88-355547/50
XRAM- C88-157198
XRPX- N88-269587
TI - Tungsten structures in semiconductors - for reducing electro-migration and corrosion relative to corresp. aluminium structures while increasing circuit densities
DC - L03 U11 R46
PA - (HEWP) HEWLETT PACKARD CO; (YOKH) YOKOGAWA-HEWLETT PACKARD
IN - BEATTY CC
NP - 3
PN - EP-295135-A 88.12.14 (8850)
J01013741-A 89.01.18 (8909) (JP)

etch rates ; ***etch reproducibility*** ; line profiles; safety precautions ; ***Al plasma etching*** ; Al metallisation; VLSI processing; BCl3 plasmas; Al films; Al alloy films; CCl4 plasmas; ***corrosion effects*** ; ***reactive ion etching*** ; ***RIE***

ET C*Cl; CCl4; C cp; cp; Cl cp; B*Cl; BCl3; B cp; Al

=> log y

COST IN U.S. DOLLARS	SINCE FILE ENTRY	TOTAL SESSION
FULL ESTIMATED COST	6.25	78.07

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)	SINCE FILE ENTRY	TOTAL SESSION
CA SUBSCRIBER PRICE	0.00	-2.66

STN INTERNATIONAL LOGOFF AT 15:51:22 ON 28 AUG 92

```
        0 CHLORINE/CN
        0 BROMINE/CN
    13272 CL/BI
        0 CL/AB
     8027 CHLORINE?/BI
        0 CHLORINE?/AB
     7359 BR/BI
        0 BR/AB
     3411 BROMINE?/BI
        0 BROMINE?/AB
    26453 ETCH?/BI
        0 ETCH?/AB
     1024 RIE/BI
        0 RIE/AB
     9891 GLOW?/BI
        0 GLOW?/AB
    58971 DISCHARGE?/BI
        0 DISCHARGE?/AB
    23143 CORROSION?/BI
        0 CORROSION?/AB
      131 ANTICORROSION?/BI
        0 ANTICORROSION?/AB
    21603 POST/BI
   149391 TREAT?/BI
      167 POST-TREAT?/BI
             ((POST(W)TREAT?)/BI)
        0 POST-TREAT?/AB
       22 POSTTREAT?/BI
        0 POSTTREAT?/AB
L26        1 (L14 OR L21) AND L18 AND L19 AND (L17 OR L22) NOT L24

=> prt fu
'PRT' IS NOT A RECOGNIZED COMMAND
The previous command name entered was not recognized by the system.
For a list of commands available to you in the current file, enter
"HELP COMMANDS" at an arrow prompt (=>).

=> d all

L26  ANSWER 1 OF 1  COPYRIGHT 1992 IEE
AN   81:1729969  INSPEC      DN  B8104040522
TI   Plasma   ***etching***   of aluminum.
AU   Hess, D.W. (Dept. of Chem. Engng., Univ. of California, Berkeley, CA,
     USA)
SO   Solid State Technology (April 1981) vol.24, no.4, p.189-94. 33 refs.
     CODEN: SSTEAP  ISSN: 0038-111X
DT   Journal
TC   Experimental
CY   United States
LA   English
AB   Plasma   ***etching***   of aluminum is an important aspect of the
     VLSI effort. Current attempts to attain reproducible plasma
     ***etching***   of aluminum and its alloys are described. The
     inhibition period associated with aluminum   ***etching***   is
     discussed, and related to   ***water***   ***vapor***   and
     ***oxygen***   contamination, along with native aluminum oxide
     effects. Differences in the chemistry of CCl4 and BCl3 discharges are
     indicated, and related to aluminum   ***etch***   rates,   ***etch***
     reproducibility, and line profiles.   ***Corrosion***   effects after
     aluminum pattern definition are discussed. Some of the safety
     precautions necessary when dealing with chlorinated plasmas are
     described.
CC   B2550E Surface treatment and oxide film formation; B2550F
     Metallisation; B257[illegible] Semiconductor integrated [illegible]circuits
CT   ALUMINIUM; LARGE S[illegible]E INTEGRATION; PLASMA APP[illegible]CATIONS; SAFETY;
     SEMICONDUCTOR TECHNOLOGY; SPUTTER   ***ETCHING***
```

```
L21                 QUE   (OXYGEN?)/BI,AB
L22                 QUE   (STEAM? OR WATER?(3W)VAPOR?)/BI,AB
L23                 QUE   ([redacted] OR L21) AND (L15 OR L16 [redacted] L20) AND L18 AND L19
L24                 QUE   (L17 OR L22) AND L23
L25                 QUE   (L14 OR L21) AND L18 AND L19 AND (L17 OR L22) NOT L2
                    4

=> s l25
'L14' IS NOT A VALID FIELD CODE
'L21' IS NOT A VALID FIELD CODE
'L18' IS NOT A VALID FIELD CODE
'L18' IS NOT A VALID FIELD CODE
'L18' IS NOT A VALID FIELD CODE
'L18' IS NOT A VALID FIELD CODE
'L19' IS NOT A VALID FIELD CODE
'L19' IS NOT A VALID FIELD CODE
'L19' IS NOT A VALID FIELD CODE
'L19' IS NOT A VALID FIELD CODE
'L17' IS NOT A VALID FIELD CODE
'L22' IS NOT A VALID FIELD CODE
'L22' IS NOT A VALID FIELD CODE
'L22' IS NOT A VALID FIELD CODE
'L22' IS NOT A VALID FIELD CODE
'L22' IS NOT A VALID FIELD CODE
'L14' IS NOT A VALID FIELD CODE
            0 OXYGEN/CN
        71307 (OXYGEN?)/BI
            0 (OXYGEN?)/AB
        26453 ETCH?/BI
            0 ETCH?/AB
         1024 RIE/BI
            0 RIE/AB
         9881 GLOW?/BI
            0 GLOW?/AB
        58971 DISCHARGE?/BI
            0 DISCHARGE?/AB
        23143 CORROSION?/BI
            0 CORROSION?/AB
          131 ANTICORROSION?/BI
            0 ANTICORROSION?/AB
        21603 POST/BI
       149391 TREAT?/BI
          167 POST-TREAT?/BI
                 ((POST(W)TREAT?)/BI)
            0 POST-TREAT?/AB
           22 POSTTREAT?/BI
            0 POSTTREAT?/AB
            0 WATER/CN
        21039 STEAM?/BI
            0 STEAM?/AB
       118666 WATER?/BI
            0 WATER?/AB
        38110 VAPOR?/BI
            0 VAPOR?/AB
            0 WATER/CN
        21039 STEAM?/BI
            0 STEAM?/AB
       118666 WATER?/BI
            0 WATER?/AB
        38110 VAPOR?/BI
            0 VAPOR?/AB
            0 OXYGEN/CN
        71307 (OXYGEN?)/BI
            0 (OXYGEN?)/AB
```

ENTER L#, L# RANGE, ALL, OR (END):113
'ETCH/A' IN USE
A single name cannot be used for two saved items at the same time.
Enter "Y" if you wish to replace the current saved name with a new
definition. Enter "N" if the current saved definition must be
preserved. You may then reenter the DETACH command with a different
saved name. Enter "DISPLAY SAVED" at an arrow prompt (=>) to see a
list of your currently defined saved names.
REPLACE OLD DEFINITION? Y/(N):y
ANSWER SET 'L13' HAS BEEN SAVED AS 'ETCH/A'

=> file inspec
COST IN U.S. DOLLARS

	SINCE FILE ENTRY	TOTAL SESSION
FULL ESTIMATED COST	0.58	71.82

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)	SINCE FILE ENTRY	TOTAL SESSION
CA SUBSCRIBER PRICE	0.00	-2.66

FILE 'INSPEC' ENTERED AT 15:48:08 ON 28 AUG 92

FILE LAST UPDATED: 22 AUG 92 <920822/UP>
>>> INSPEC 2 WITH INSPEC THESAURUS AND PHYSICAL PROPERTIES THESAURUS <<<
FILE COVERS 1969 TO DATE.

=> recall etch
'ETCH MUST END IN '/Q', '/A', '/L', '/S', OR '/B'
The name of a saved query (or structure or screen set) ends in '/Q'.
The name of a saved answer set ends in '/A'. The name of a saved L#
list ends in '/L'. The name of an SDI request ends in '/S'. The name
of a BATCH search request ends in '/B'. You must enter the /Q, /A,
/L, /S, or /B at the end of the name.
ENTER NAME OF SAVED ITEM TO ACTIVATE OR (END):etch/a
ANSWER SET WAS CREATED IN FILE 'CA'.
An answer set can be activated only in the same file in
which the search was done. Use the FILE command to switch
to the correct file. Then enter ACTIVATE.
ACTIVATE QUERY ONLY? (Y)/N:y
L14 QUE OXYGEN/CN
L15 QUE CHLORINE/CN
L16 QUE BROMINE/CN
L17 QUE WATER/CN
L18 QUE (ETCH? OR RIE OR GLOW?(3W)DISCHARGE?)/BI,AB
L19 QUE (CORROSION? OR ANTICORROSION? OR POST-TREAT? OR POST
     TREAT?)/BI,AB
L20 QUE (CL OR CHLORINE? OR BR OR BROMINE?)/BI,AB
L21 QUE (OXYGEN?)/BI,AB
L22 QUE (STEAM? OR WATER?(3W)VAPOR?)/BI,AB
L23 QUE (L14 OR L21) AND (L15 OR L16 OR L20) AND L18 AND L19
L24 QUE (L17 OR L22) AND L23
L25 QUE (L14 OR L21) AND L18 AND L19 AND (L17 OR L22) NOT L2
     4

=> d ti 1-4
'L25' HAS NO ANSWERS
L14 QUE OXYGEN/CN
L15 QUE CHLORINE/CN
L16 QUE BROMINE/CN
L17 QUE WATER/CN
L18 QUE (ETCH? OR RIE OR GLOW?(3W)DISCHARGE?)/BI,AB
L19 QUE (CORROSION? OR ANTICORROSION? OR POST-TREAT? OR POST
     TREAT?)/BI,AB
L20 QUE (CL OR CHLORINE? OR BR OR BROMINE?)/BI,AB

FULL ESTIMATED COST 31.27 37.12

DISCOUNT AMOUNTS (FOR [redacted]LIFYING ACCOUNTS) S[redacted]CE FILE ENTRY TOTAL SESSION

CA SUBSCRIBER PRICE -2.66 -2.66

FILE 'INSPEC' ENTERED AT 15:45:43 ON 28 AUG 92
COPYRIGHT 1992 (c) INSTITUTION OF ELECTRICAL ENGINEERS (IEE)

FILE LAST UPDATED: 22 AUG 92 <920822/UP>
>>> INSPEC 2 WITH INSPEC THESAURUS AND PHYSICAL PROPERTIES THESAURUS <<<
FILE COVERS 1969 TO DATE.

=> d ti 1-8
NO ANSWERS DISPLAYED.
THE ANSWER SET WAS CREATED IN FILE 'CA'.
USE THE FILE COMMAND TO CHANGE TO THE CORRECT FILE.
You have entered a file that is not in the current file environment.
Enter "DISPLAY HISTORY" to see a list of the files in the current environment.

=> d his

(FILE 'HOME' ENTERED AT 15:31:50 ON 28 AUG 92)

FILE 'REGISTRY' ENTERED AT 15:32:05 ON 28 AUG 92
L1 1 S OXYGEN/CN
L2 1 S CHLORINE/CN
L3 1 S BROMINE/CN
L4 0 S WATER VAPOR/CN OR STEAM/CN
L5 1 S WATER/CN

FILE 'CA' ENTERED AT 15:33:29 ON 28 AUG 92
L6 78268 S (ETCH? OR RIE OR GLOW?(3W)DISCHARGE?)/BI,AB
L7 147152 S (CORROSION? OR ANTICORROSION? OR POST-TREAT? OR POSTTRE
L8 336796 S (CL OR CHLORINE? OR BR OR BROMINE?)/BI,AB
L9 251815 S (OXYGEN?)/BI,AB
L10 97020 S (STEAM? OR WATER?(3W)VAPOR?)/BI,AB
L11 22 S (L1 OR L9) AND (L2 OR L3 OR L8) AND L6 AND L7
L12 3 S (L5 OR L10) AND L11
L13 8 S (L1 OR L9) AND L6 AND L7 AND (L5 OR L10) NOT L12

FILE 'INSPEC' ENTERED AT 15:45:43 ON 28 AUG 92

=> file ca
COST IN U.S. DOLLARS SINCE FILE ENTRY TOTAL SESSION

FULL ESTIMATED COST 2.12 71.24

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS) SINCE FILE ENTRY TOTAL SESSION

CA SUBSCRIBER PRICE 0.00 -2.66

FILE 'CA' ENTERED AT 15:47:00 ON 28 AUG 92
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FILE COVERS 1967 - 23 Aug 92 (920823/ED) VOL 117 ISS 08.
For OFFLINE Prints or Displays, use the ABS or ALL formats to obtain abstract graphic structures. The AB format DOES NOT display structure diagrams.

=> save etch
ENTER L#, L# RANGE, ALL, OR (END):end

magnetic recording tapes and disks

L13 ANSWER 7 OF 8 COPYRIGHT 1992 ACS
TI Corrosion phenomena in metal-encapsulated tin-plated transistors

L13 ANSWER 8 OF 8 COPYRIGHT 1992 ACS
TI Bombardment of glasses with ions of active gases in a glow discharge

=> d ab 1,3,7-8

L13 ANSWER 1 OF 8 COPYRIGHT 1992 ACS
AB A novel chem. treatment was used to passivate high temp. superconducting Y-Ba-Cu-O of both bulk oxides and thin films. The water resistance of the Y-Ba-Cu-O was greatly improved after the superconductors were treated with HF at room temp. No obvious etching of the Y-Ba-Cu-O and no degrdn. of zero resistance temp. were obsd. after the Y-Ba-Cu-O superconductors were treated with 49% HF or buffered HF commonly used in semiconductor technol. The formation of a thin layer of amorphous fluoride on the film surface could be related to the improved water resistance of Y-Ba-Cu-O after HF treatment. It seems that HF destroys the corrosion products formed on the Y-Ba-Cu-O surface due to the reaction of the Y-Ba-Cu-O with water vapor or carbon dioxide in air.

L13 ANSWER 3 OF 8 COPYRIGHT 1992 ACS
AB An Al- or Al-contg. alloy circuit-coated substrate is treated with F gas or dild. HF, exposed under a gas mixt. contg. O and water or at least H atoms to oxidize the surface, and washed with water to give the title substrate. An Al-Si-Cu alloy circuit-coated substrate, having resist residue after selective etching, was impregnated with dild. aq. HF, impregnated with MeOH, dried, oxidized by exposure under a gas mixt. of O and H in microwave discharge, and washed with water to show removal of the resist with no corrosion on the surface.

L13 ANSWER 7 OF 8 COPYRIGHT 1992 ACS
AB The corrosion in Ni encapsulated Sn-plated Si transistors was studied after > 10000 h operation at 40.degree.. Corrosion affects current-voltage properties. Corrosion occurs at the Au-plated base plate near the semiconductor, on the glass coating of the base plate, on the Al wires, and on the base and emitter region Al contacts. This corrosion is essentially due to electrodiffusion of ions on the glass and semiconductor and partly due to HCl or KCl etching, and anodization of the metal particles of the base plate. The corrosion is caused by H2O produced by reaction of H from the Sn plate and O2 trapped in the casing. It is prevented by using N2 instead of air during the processing.

L13 ANSWER 8 OF 8 COPYRIGHT 1992 ACS
AB Bombardment of glasses with ions of active gases under definite conditions of the glow discharge causes chem. reactions between the components of the glass and the discharge gases. The corrosion figures forming are characteristic for glasses of a definite compn. and can be explained by the chem. heterogeneity of the investigated glasses LK5, K8, BK10, and F1. This circumstance can apparently be used as a method for investigating chem. heterogeneity of glasses, and make it possible to obtain information on the shape, the dimensions, and the nature of the distribution of these heterogeneities. Increased stability to atm. corrosion of the glasses treated by the above discharge is caused by the cathode metal oxide film forming on them, and by the removal of the alkali components from the surface layer of the glass.

=> file inspec
COST IN U.S. DOLLARS SINCE FILE ENTRY TOTAL SESSION

FULL ESTIMATED COST 31.29 97.12

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS) SINCE FILE ENTRY TOTAL SESSION

CA SUBSCRIBER PRICE -2.66 -2.66

FILE 'INSPEC' ENTERED AT 15:45:43 ON 28 AUG 92
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FILE LAST UPDATED: 22 AUG 92 <920822/UP>
>>> INSPEC 2 WITH INSPEC THESAURUS AND PHYSICAL PROPERTIES THESAURUS <<<
FILE COVERS 1969 TO DATE.

=> d ti 1-8
NO ANSWERS DISPLAYED.
THE ANSWER SET WAS CREATED IN FILE 'CA'.
USE THE FILE COMMAND TO CHANGE TO THE CORRECT FILE.
You have entered a file that is not in the current file environment.
Enter "DISPLAY HISTORY" to see a list of the files in the current environment.

=> d his

(FILE 'HOME' ENTERED AT 15:31:50 ON 28 AUG 92)

FILE 'REGISTRY' ENTERED AT 15:32:05 ON 28 AUG 92
L1 1 S OXYGEN/CN
L2 1 S CHLORINE/CN
L3 1 S BROMINE/CN
L4 0 S WATER VAPOR/CN OR STEAM/CN
L5 1 S WATER/CN

FILE 'CA' ENTERED AT 15:33:29 ON 28 AUG 92
L6 78268 S (ETCH? OR RIE OR GLOW?(3W)DISCHARGE?)/BI,AB
L7 147152 S (CORROSION? OR ANTICORROSION? OR POST-TREAT? OR POSTTRE
L8 336796 S (CL OR CHLORINE? OR BR OR BROMINE?)/BI,AB
L9 251815 S (OXYGEN?)/BI,AB
L10 97020 S (STEAM? OR WATER?(3W)VAPOR?)/BI,AB
L11 22 S (L1 OR L9) AND (L2 OR L3 OR L8) AND L6 AND L7
L12 3 S (L5 OR L10) AND L11
L13 8 S (L1 OR L9) AND L6 AND L7 AND (L5 OR L10) NOT L12

FILE 'INSPEC' ENTERED AT 15:45:43 ON 28 AUG 92

=> file ca
COST IN U.S. DOLLARS SINCE FILE ENTRY TOTAL SESSION

FULL ESTIMATED COST 2.12 71.24

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS) SINCE FILE ENTRY TOTAL SESSION

CA SUBSCRIBER PRICE 0.00 -2.66

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=> save etch
ENTER L#, L# RANGE, ALL, OR (END):end